# APPENDIX 2:

# LIST OF THE TECHNOLOGIES REVIEWED
# (Alphabetical):

### *Benefit-Cost Analysis of Bicycling Facilities:*

The tool provides a standard method to analyze potential costs and benefits of a proposed bicycling facility while enabling users to tailor information to reflect individual projects. The table produced can be imported in excel and can be customized according to need of the research. This includes the educational utility of helping students, planners and policymakers to understand the potential hidden costs and less quantitative benefits associated with bicycling infrastructure.

http://www.bicyclinginfo.org/bikecost/index.cfm

### *Big Box Evaluator:*

This is an online tool designed to guide planners and the public in the evaluation of the pros and cons of big retail operating in their community. This is an example of limited use software but it is indicative of what can be developed. http://www.bigboxevaluator.org

### *CAVE (Cave Automatic Virtual Environment):*

This is a hardware visualization tool capable of visualizing viewscapes at a 1:1 3D scale. Due to its design it has limited use on participatory processes that have more than 3-5 people in the group. http://inkido.indiana.edu/a100/handouts/cave_out.html.



**Figure APP.2.1:**

A CAVE for virtual reality

***Community Image Survey*** *(also known as **Visual Preference Survey/Image Preference Survey**):*

This is a survey method involving pictures made to resemble conditions describing the different design alternatives. It is usually employed for city or neighborhood revitalization projects. http://www.sbcouncil.org/Visual-Preference-Survey.

***CommunityViz:***

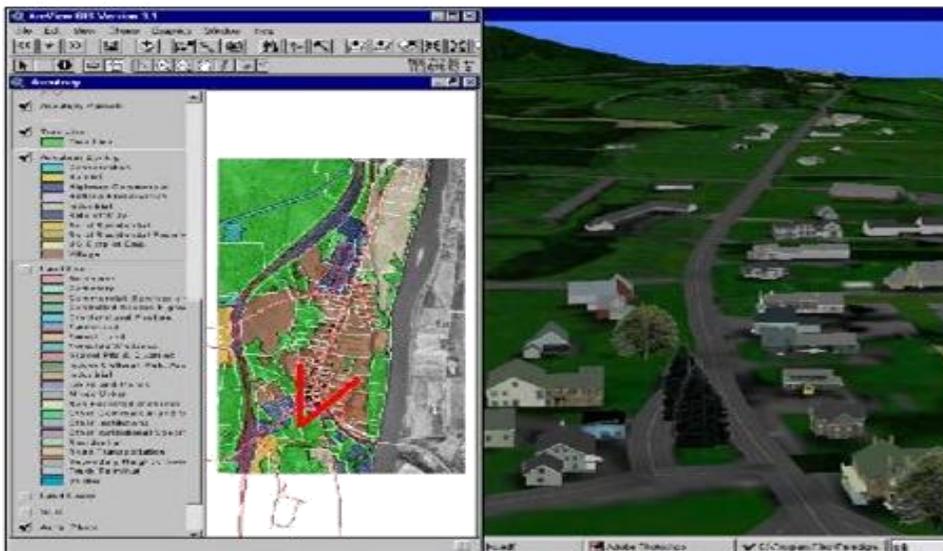This is a software enhancement for ArcGIS that provides enhanced impact analysis, scenario analysis, and 3-D visualization capabilities. http://www.communityviz.com.



**Figure APP.2.2:** CommunityViz

***Decision Theater:***

This technology belongs in the systems category since it is an actual building designed to facilitate participatory processes. It has various visualization and collaboration technologies integrated in one unit. www.decisiontheater.org.

***Electronic Visualization Laboratory (EVL):***

The Electronic Visualization Laboratory (EVL) is an interdisciplinary graduate research laboratory that combines art and computer science, specializing in advanced visualization and networking technologies. It has

been used for participatory processes on several occasions. http://www.evl.uic.edu/index2.php

*Electronic Interactive Charrette:*

Both, a software and a hardware technology where participants engage in a standard charrette, developing a design on a printed map with the assistance of an expert. Images are then scanned and placed onto a computer where renderings and/or manipulated photos encapsulate the principal design concepts. http://www.smartcommunities.ncat.org/toolkit/tcddm/dover1.htm

*Environmental Simulation Center:*

The center specializes in visualization of city scapes. Its purpose is to utilize advanced computer visualization to involve the public in decision making. http://www.simcenter.org/index.html

*GeoWall:*

It is a hardware technology similar to the CAVE but resembling a window through which users see 3D renderings of different designs. http://geowall.geo.lsa.umich.edu/intro.html



**Figure APP.2.3:** GEOWALL

*GIS/Map Planning Table:*

This is a hardware technology consisting of a horizontal surface capable on which one or two computer screens are projected. Single user tracking devices allow the user to manipulate any program displayed on the surface. There are several known versions of this technology with the first being developed at the University of Illinois by Lew Hopkins.

*Google Earth:*

This is both software and a GUI technology. It is basically an "almost" free application that people can use to access maps and aerial imagery. In addition it allows for customization and the display of prepared material. Google Earth requires little programming expertise. http://earth.google.com/



**Figure APP.2.4:** Google Earth

*Google Maps:*

Similar to Google Earth but with the difference that it provides also a set of programming tools allowing people to use the mapping engine to map, display, and distribute their own data and applications. Google Maps require considerable programming expertise. http://maps.google.com/

*Google SketchUp:*

It is a widely used 3D imaging and modeling application where users can develop material later used in participatory processes or in conjunction with Google Earth. http://sketchup.google.com/
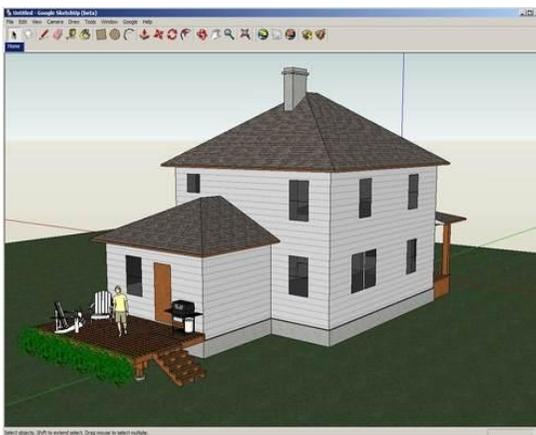


**Figure APP.2.5:**

Google sketch up

### *GroupMind Express:*

It is an internet-based application that links computers together to produce and share digital information. GroupMind Express is made up of four complementary components, called "products," each with an array of features. http://groupmindexpress.com/

### *INDEX:*

It is GIS-based software designed to support the entire process of community planning and development. Applications often begin with benchmark measurements of existing conditions to identify problems and opportunities that merit attention in plans. INDEX can then be used to design and visualize alternative planning scenarios, analyze and score their performance, and compare and rank alternatives. http://www.crit.com/index/index.html

### *Keypad Voting:*

Generally, keypad voting gives each audience member a wireless keypad with numerically labeled buttons in which to indicate answers to a multiple-choice question. http://www.audiencevoting.com/fsr.html



**Figure APP.2.6:** Keypad voting

### *London Profiler:*

It is a web site application that enables users to display a customized map of the geo-demographics of Greater London including: cultural/ethnicity, e-literacy (electronic), levels of higher education, and health related problems. London profiler visualizes neighborhood profiles through a Google Maps Application Programming Interface (API), created using GMAP creator. London Profiler allows users to visualize themes at different scales, search by postcode or borough level, change layer transparency, and to add KML layers. http://www.londonprofiler.org/

### M3D (Minnesota 3-D):

It is a dynamic, GIS-based Internet application that brings together labor market, housing, and development information and analysis for the Twin Cities metro area into one easy-to-use tool for economic and community developers. http://www.cura.umn.edu/M3D.php

### MetroQuest:

It is a standalone software program that allows people to alter aspects of their city to view future scenarios up to 40 years into the future. MetroQuest has nine major categories, ranging from population/job location, housing density and roads/transit. By answering a series of multiple choice questions, users can be given a satellite-view map (color coded) and graphical displays showing projected changes into the future. Users can switch their answers at will and instantly see changes to the scenario results. These custom made scenarios can be presented to the larger audience or, for the On-line version, allow users to experiment with creating scenarios themselves. http://www.envisiontools.com/uses.aspx

### Microsoft Surface:

It is a stand-alone computer system with a projection tabletop that users can manipulate with touch, instead of using a keyboard and mouse. It allows for multiple user input but has not yet been utilized in a participatory process. http://www.microsoft.com/surface/

### PathMaker:

It is an organizational application that outlines step-by-step progression for client projects. Theoretically, PathMaker could allow participants to access project information and leave feedback in an alternative method. The ability to hold on-line conferences and to show conceptual visual diagrams might allow participants to gain a better understanding of the planning process while enabling them the opportunity to express feedback if their availability did not permit the attendance of traditional meetings. http://www.skymark.com/pathmaker/pathhome.asp

### Pictometry (including Microsoft's Virtual Earth):

It involves the capture and access of high-resolution imagery photos that are used to create a "*sophisticated, integrated information system that allows users to have high-resolution images of neighborhoods, landmarks, roads, and complete municipalities from multiple views at the click of a mouse.*"

These photos often allow users to import them into GIS for geo-referencing and can make semi-accurate measurements of buildings and lot sizes. Most often, users are public agencies that purchase the photos for uses in planning, 911 dispatch, and engineering.

http://www.pictometry.com/home/home.shtml

### *PLACE3S (Planning for Community Energy, Economic, and Environmental Sustainability):*

It is a customized process that was developed primarily by the California Energy Commission (with involvement by the Oregon Department of Energy and the Washington State Energy Office) to create efficient communities through a public participatory process.

http://www.energy.ca.gov/places/index.html

### *Shaping Dane:*

Shaping Dane is the project name given to an initiative by the Verona Planning Resource Center to provide an online portal with links to information about the planning process. When accessing the Shaping Dane website (http://www.lic.wisc.edu/shapingdane/), users are given access to two additional parts of the Verona Planning Resource Center website.

The first directs users to the main webpage where they can choose between many different potential links. Several of the links encompass the "*on-line*" atlas, allowing users to generate custom made maps of Verona Township or to view already produced maps linked to photographs of landmarks and/or aerials. There is also a "*planning library*" which allows users to read up on GIS, Smart Growth, or planning in general.

### *Second Life (SL):*

Is an online virtual world developed by Linden Lab which was launched on June 23, 2003. A number of free client programs called Viewers enable Second Life users, called Residents, to interact with each other through avatars. Residents can explore the world (known as the grid), meet other residents, socialize, participate in individual and group activities, and create and trade virtual property and services with one another. Second Life is intended for people aged 13 and over, and as of 2011 has more than 20 million registered user accounts.

Built into the software is a three-dimensional modeling tool based around simple geometric shapes that allows residents to build virtual objects. There is also a procedural scripting language, Linden Scripting Language,

which can be used to add interactivity to objects. More complex three-dimensional sculpted prims (colloquially known as sculpties), textures for clothing or other objects, and animations and gestures can be created using external software. The Second Life Terms of Service provide that users retain copyright for any content they create, and the server and client provide simple digital rights management functions.

## *SimCity games series:*

The SimCity games are simulations where users design cities using some functions performed by governments. For example, zoning is used to determine where residential, commercial and industrial uses are permitted. A road network is required to access land, while electricity and water are needed to support any development. Users also build schools, police and fire stations, and hospitals to provide needed services to the citizens, called "*sims*". Users can adjust tax rates, enact ordinances or take out loans to balance the city's budget as needed. http://simcitysocieties.ea.com





**Figure APP.2.7:** SimCity

### TELUS (Transportation, Economic and Land Use System):

It is a fully integrated information management and decision support system to help metropolitan planning organizations (MPO) and state departments of transportation (DOTs) develop their transportation improvement programs and carry out other planning responsibilities, particularly public participation. Each MPO and State DOT decides on projects to include in their respective Transportation Improvement Programs (TIP) and State Transportation Improvement Programs (STIP). TELUS helps in making these decisions based on a variety of factors, including: future travel demand, project life cycle costs, land use changes, economic growth, and environmental impacts. http://www.telus-national.org/general/hgac.html

### ThinkTank:

It is an application that allows a group of people to communicate in a web conference over an internet browser. The program is accessed through a special icon (a light bulb) added to a user's default internet browser, but does not require the installation of any actual software.

http://www.groupsystems.com

### Townsquare:

It specifically designs a public-based website (or "*portal*") that is based on the needs of the client. With that, Townsquare provides a series of tools for the client to update and manage content on the website. These tools include a document manager, discussion facilitator (providing response services for public input), or a news coordinator allowing site users to sign up for notifications on upcoming events.

http://www.migtownsquare.com/Content/10001/solutions.html

Other more advanced tools are:

- Townsquare: Content Manager
- Townsquare: Education Simulator
- Townsquare: E-Mail Notification Administrator
- Townsquare: Image Annotator
- Townsquare: Interactive GIS Mapper
- Townsquare: Project Data Manager
- Townsquare: Survey Creator
- Townsquare: Wiki Publisher

### *University College London (UCL) Centre for Advanced Spatial Analysis (CASA):*

The Centre of Advanced Spatial Analysis or CASA is a research center located within the University College London that specializes in the creation of computer-based research and applications studying spatial analysis and planning. Started in 1995-1996, CASA works within the departments of Geography, Geomatic Engineering, Planning/Architecture (through the Bartlett School) along with the Institute of Archaeology and the Centre for Transport Studies. http://www.maptube.org/casa.aspx

### *Urban Simulation Team:*

The primary focus of the Urban Simulation Team is to provide a digital 3D model of the entire Los Angeles basin, covering some four thousand square miles. The Urban Simulation Team utilizes a series of twenty specialized graphical workstations for creating and interacting with the model. To model an urban area, plan view aerial photographs are used as the base image. Streets and blocks are identified, outlined, and inserted into the database. Video images from a street-level survey of the study area are then fed directly into the computer, perspective- and color-corrected. Modeling is then done primarily in Multigen where viewing of the model occurs primarily through Openflight. http://www.ust.ucla.edu/ustweb/ust.html



**Figure APP.2.7:**

Urban Simulation Team

### UrbanSim:

UrbanSim is a Python/C++ based complex software system that models the urban processes of a region over subsequent decades, through upwards of 55 separate indicators (which may range from development policy to population density). Metropolitan areas are broken down into 150x150 meter grids that form the basis of UrbanSim's geographic representation. UrbanSim then employs a "discrete-choice" model, meaning its scenarios are based upon the choices of its "actors" (households, jobs, development, etc) and uses probability within its programmed set of variables to determine how a region is most likely to develop. http://www.urbansim.org

### What If:

What If? Is a GIS-based, policy-orientated planning system that attempts to show a possible scenario if particular actions or policies were adopted. It is not meant to predict the future, but to foreshadow potential outcomes given decisions made in the present. (Klosterman 2001) It considers three main categories: land suitability, land demand and public policies (in how it is impacts the former two). Each category is displayed as an additional layer that is projected over an existing GIS map, so people may have a geographic reference point to the information. (**Klosterman** 2001) http://whatifinc.biz/index.html